ERRATA – No. 1

Recovery Strategy for California Coho Salmon (Onchorhynchus kisutch)

Report to the Fish and Game Commission
Public Review Draft
November 2003

The following updates were inadvertently omitted from the Economic Analysis (Appendix F) in the above referenced document. Insertions are underscored and deletions are ~~stricken~~. In the case of Table 22, the entire table was replaced.

Page F-2 Insert following Paragraph 1	The aggregate cost estimates also include the cost of implementing recommendations regarding changes in timberland management. Three alternative sets of recommendations were developed regarding changes in timber harvesting practices in areas with coho salmon. We develop cost estimates for these alternatives in the section entitled "Changes In Timberland Management."

Page F-59 Insert following Table F-20	CHANGES IN TIMBERLAND MANAGEMENT Three alternative sets of recommendations were developed regarding changes in timber harvesting practices in areas with coho salmon. One alternative, Alternative A, was presented to the range-wide Coho Recovery Team by environmental organization members of that team. The second and third alternatives, Alternative B and Alternative C, were developed by the Department in part from a recommendation that was presented to the Coho Recovery Team by forest landowner representatives of that team. This section measures the cost to forest products companies from implementing these various alternatives. This is an implicit calculation of fiscal cost to companies of changes in timber harvest practices. Results are developed and expressed in a manner consistent with the rest of the document. First, we decompose each alternative into its components with the most potential to change resource allocation. Next, for each recovery action we calculate the per-acre cost of effecting the change. Then, we multiply this per-acre cost by the number of acres affected by the Recovery Strategy to obtain total cost. At this stage, we lack sufficient data to calculate socioeconomic costs of timberland management changes. While there are at present three alternatives, we are only able to calculate costs for Alternatives A and B. Alternative C is too vague to be quantified. *Alternative A* Alternative A could be implemented in two different ways. The Fish and Game Commission could approve for this alternative for inclusion in the strategy as: (1) guidelines for issuance of Incidental Take Permits under Fish and Game Code section 2081(b) or consistency determinations under Fish and Game Code section 2080.1 where these recommended measures would fully mitigate take and at the same time contribute to the recovery of coho salmon. The effect of this would be to streamline the permitting process as an incentive for recovery. In accordance with Fish and Game Code section 2114, the guidelines would be part of the Commission's rulemaking for listing; or (2) recommend the Board of Forestry implement it through a rulemaking proceeding to establish regulations that ensure that timber operations are consistent with the long-term survival of coho salmon. The most expensive component of Alternative A is the inability of timber companies to operate on unpaved roads in the wet season. In particular, "use of any unpaved road segments within or appurtenant to a timber harvest plan area shall cease when any of the following occur: (a) precipitation is sufficient to generate overland flow off the road surface; or (b) use of any portion of the road results in rutting of the road surface. Road use shall not resume until the rod is dry. "Dry" is defined as a road surface that is well drained; and is not rutting, discharging fine sediments, or causing a visible turbidity increase in a ditch or on a road surface that drains into a Class I, II, or III watercourse. Access for road inspection and access to correct emergency situation shall be allowed at any time by a vehicles rated one ton or less." This restriction presents significant operational

difficulties. Working with data from The Pacific Lumber Company (PALCO), it is estimated that the road restrictions alone could decrease the per-acre value of timberland by 5 to 10 percent.

Large per-acre impacts are also associated with the requirement in Alternative A that landowners retain the 10 largest trees along Class I watercourses. The requirement specifies that "recruitment of large woody debris to Class I watercourses shall be ensured by retaining the ten largest diameter confers (live or dead), on each side of the watercourse, per 330 feet of stream length, within 50 feet of the watercourse or lake transition line." This requirement will have minimal impact in some cases, but a major impact in others. PALCO data suggest that per-acre impacts range anywhere from 5 to 85 percent of value. Since Class I watercourses comprise only 3 percent of PALCO land, the diminished value across all ownership (a weighted value) is from 0.2 to 2.6 percent.

With regard to Class II watercourses, Alternative A provides that "at least 85% overstory canopy shall be retained within 50 feet of the watercourse or lake transition line. In an additional outer zone, overstory canopy closure shall be at least 65%. The overstory canopy in each zone shall be composed of at least 25% overstory conifer canopy post-harvest. The outer zone shall be 25 feet in width where side slope class is 30-50%. The outer zone shall be 75 feet in width where the slope class is greater than 50%. While attaining the canopy retention standards described in section 2.a.(5), recruitment of large woody debris to Class II watercourses shall be ensured by retain the five largest conifers (dead or alive) on each side of the watercourse per 330 feet of stream channel length, within 50 feet of the watercourse of lake transition line."

These requirements are estimated to reduce timber harvest in affected areas by 35 percent, resulting in a similar loss in per-acre value. In the case of PALCO, 4 percent of total ownership is of this type, implying a weighted loss in value of between 1.0 and 1.4 percent.

"Inner gorge" requirements on Class I and II watercourses are also relatively expensive. Alternative A envisions that "where an inner gorge extends beyond a Class II WLPZ and slopes are greater than 55%, a special management zone shall be established beyond the WLPZ where the use of even aged regeneration methods is prohibited. This zone shall extend upslope to the first major break in slope (i.e., where the slope is less than 55% for a distance of 100 feet or more) or 200 feet as measured from the watercourse of lake transition line, whichever is less. Within this zone, methods and retention standards shall be as described in 14 CCR 913.2, 933.2, and 953.2."

The provision on even-age regeneration is forecasted to reduce harvest volumes by 50 percent in these areas, which account for 4 percent of PALCO lands. The implied diminution in value across all acres is between 1.6 and 2 percent.

Finally, Alternative A requires a 25-foot "protection zone" on each side of Class III watercourses for "slopes less than 30% and at least a 50-foot protection zone on each side of the watercourse for slopes greater than 30%. Retain all trees situated within the channel zone (i.e., bank-full channel) and trees that have boles that overlap the edge of the bank-full channel. Within the protection zones at least 50% of the understory vegetation shall be left post-harvest in an evenly distributed condition. All regeneration conifers, snags, large woody debris (LWD), and hardwoods shall be retained within the Class III protection zones except removal as necessary for yarding and crossings. Commercial timber operations will be allowed to "yard through" a Class III riparian management zone. Burning for purposes of site preparation shall not be initiated in the protection zones."

This provision is anticipated to have a relatively minor impact on timberland values. PALCO estimates a loss in value of between 0 and 5 percent per acre. Affected lands comprise roughly 18 percent of their total ownership, with the result that the diminished value across all lands is between 0.0 and 0.9 percent.

Taking these five main components of Alternative A together, it is estimated that the total percentage reduction in timberland value is between 7.8 and 16.9 percent.

Alternative B

There are two ways in which sections 17 and 18 of Alternative B could be implemented. The Fish and Game Commission could approve section 17 and 18 for inclusion in the strategy as: (1) a recommendation to CDF and DFG to improve within existing law and authorities the implementation and enforcement of the Forest Practices Rules to ensure that timber operations are consistent with

recovery of coho salmon. If existing law and authorities are found to be inadequate to provide for such improvements, then the Commission could alternately recommend that DFG and/or CDF seek legislation to provide such authority; or (2) implementation as guidelines for issuance of Incidental Take Permits under Fish and Game Code section 2081(b) or consistency determinations under Fish and Game Code section 2080.1 where these recommended measures would fully mitigate take and at the same time contribute to the recovery of coho salmon. The effect of this would be to streamline the permitting process as an incentive for recovery. In accordance with Fish and Game Code section 2114, the guidelines would be part of the Commission's rulemaking for listing.

The main cost difference between Alternatives B and A is that the cost of the road restrictions is much lower in the former. Alternative B requires only that "for construction, reconstruction, upgrades, maintenance, and operation of roads within and appurtenant to THPs detailed site specific recommendations will be developed consistent with the *Handbook for Forest and Ranch Roads* (prepared by Pacific Watershed Associates, 1994c, for the Mendocino County Resource Conservation District in cooperation with the California Department of Forestry and the U.S. Soil Conservation Service. Mendocino Resource Conservation District, Ukiah, California. 163 pages.)" It is difficult to quantify the costs of this action item as it does not entail specific changes, and since many companies already follow these practices. Thus, while the road restrictions in Alternative B may well impose costs for some operations and at some locations, they are not quantified in this document.

Several aspects of Alternative B are identical to Alternative A. These include the requirement for Class I, II and III watercourses described above. One difference is for watercourses where an inner gorge is present. For Class II only, Alternative B requires that the landowner "(1) provide 200' Watercourse and Lake Protection Zones (WLPZ); (2) require uneven-aged management; (3) prohibit tractor operations; and (4) require review of timber operations by a certified geologist." The cost of the "inner gorge" requirements is a loss in per-acre value of between 40 and 50 percent since even-age regeneration is still prohibited, but as opposed to Alternative A the loss applies only to Class II watercourses. The weighted average value of timberland is reduced between 1.2 and 1.5 percent.

One requirement that is contained in Alternative B and not Alternative A is that "for Class III watercourses, where a headwall swale is present, (1) utilize only single-tree selection prescriptions as per 14 CCR 913.2(a)(2)(A) that retain the diameter distribution present before timber operations or a "thinning from below" prescription as per 14 CCR 913.3(a) that retains dominant and codominant trees; and (2) require review of timber operations by a certified engineering geologist." This requirement will also prohibit even-age regeneration, resulting in a loss in land values of between 40 and 50 percent where it applies. PALCO estimates that 1 percent of its land would be affected by this provision, so that the weighted average loss in value from this provision is between 0.4 and 0.5 percent.

Taken together, Alternative B is estimates to reduce timberland values by 2.8 to 6.9 percent. The difference between the cost of this alternative and the cost of Alternative A is explained by the looser restrictions in road usage, construction and maintenance in the latter.

Using the calculated figures for percentage diminution in timberland value, it is possible to obtain a rough measure of the costs of the two alternatives. The percentage diminution in value should be applied to the value of timber harvesting rights per acre to obtain per-acre costs. Based on the advice of PALCO, we assume that the rights to harvest timber throughout the range of coho salmon are valued at about $1,400 per acre on average. It follows that Alternative A amounts to a diminution in value of between $109 and $237 per acre. Alternative B will reduce values by between $39 and $97 per acre.

Data from DFG's FRAP program indicate that there are 3.84 million acres of privately owned timberland throughout the range of coho salmon. Taking this acreage of TPZs and multiplying by the weighted average per acre diminution in value, it follows that the cost of Alternative A is between $419 and $910 million. The cost of Alternative B is lower, and is estimated to fall between $150 and $372 million. These are present value calculations consistent with other fiscal cost estimates detailed in this report.

Socioeconomic Impacts

Socioeconomic impacts associated with this class of recovery recommendations cannot be quantified at this time. Some sense of the sort of costs that will be incurred can be found in sections 6.2 (in the

	case of roads) and 4.2 (in the case of conservation easements). Economic activity in the timber industry may fall as a result of this class of recommendations.
Page F-61 Change in Paragraph 1	… Solely for the purposes of this illustrative calculation, we assume that instream flows in the SSPP region will be increased by ~~4800~~ 8,400 acre-feet per year.
Page F-61 Change in Paragraph 3	…The socioeconomic impacts associated with this acquisition of water for fish, in the form of lost jobs and other economic activity (see the section entitled "Water Acquisitions") will be about $6 ~~billion~~ million in present value.
Page F-63 Insert in Paragraph 4	**…** These estimates include the cost of implementing the SSPP (shown on a disaggregated basis) and the mid-point estimate of the cost of implementing changes in timberland management, but exclude the cost of water acquisition in all regions outside of the SSPP area. These figures also exclude the costs and impacts of actions that cannot be quantified at this time (see the section entitled "Impacts Identified But Not Quantified"). Thus, these costs and impacts only partially reflect the cost of coho salmon recovery under the strategy.
Page F-64 Change in Paragraph 1	The total measured fiscal costs of implementing the Recovery Strategy are about ~~$4.6~~ $5 billion dollars …
Page F-64 Changes in Paragraph 2	If water acquisition costs in the SONCC Coho ESU are proportional to those in the SSPP (where water acquisition accounts for about 20 percent of the total cost) it is likely that the costs of recovery under the strategy will be closer to $5.5 billion, and socioeconomic impacts somewhat lower, though still positive.
Page F-64 Insert following Paragraph 4	Changing timberland management practices will result in costs on the order of $463 million. As discussed in the section entitled "Changes In Timberland Management", if Alternative A is adopted, costs will be on the order of $665 million. Costs will be lower if Alternative B is adopted, on the order of $261 million.
Page F-64 Insert in Paragraph 5	…. The socioeconomic impacts of water acquisition in the SONCC range will be negative (for the SSPP these negative impacts equal about $6 million), ~~but~~ as will the socioeconomic impacts of timberland management changes. However, when these impacts can be quantified it is likely that measured socioeconomic impacts of implementing the Recovery Strategy will still be positive.

Page F-65
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Table 22

Table 22: Summary of cost and impacts of coho salmon recovery

Class of recovery action	Fiscal Costs ($)	Socioeconomic Impacts ($)
Habitat Restoration		
SONCC (So. Oregon and No. Calif. Coast)	2,562,800,831	1,596,393,118
CCC (Central Calif. Coast)	686,143,451	438,267,309
Total excl. SSPP	3,248,944,283	2,034,660,427
Total SSPP	371,583,569	159,296,346
Total incl. SSPP	3,620,527,852	2,193,956,773
Monitoring, evaluation and planning		
Total excl. SSPP	44,000,000	0
Total SSPP	10,604,000	0
Total incl. SSPP	54,604,000	0
Education and outreach		
Total excl. SSPP	31,000,000	0
Total SSPP	8,832,520	0
Total incl. SSPP	39,832,520	0
Water management		
Total excl. SSPP		
Total SSPP	10,334,024	0
Water use efficiency		
Total excl. SSPP		
Total SSPP	3,200,000	2,020,000
Water acquisition		
Total excl. SSPP		
Total SSPP	60,217,676	(6,143,359)
Other (includes SSPP Protection and easements)		
Total excl. SSPP	808,553,878	
Total SSPP	1,244,789	
Timberland management		
Alternative A	665,000,000	
Alternative B	261,000,000	
Total excl. SSPP and water acquisition*	4,595,498,161	2,034,660,427
Total SSPP	466,016,578	155,172,987
Total incl. SSPP, excl. water acquisition	5,061,514,739	2,189,833,414

Notes: Habitat restoration includes removal of barriers to passage, riparian revegetation and streambank improvements, improvements in instream complexity, and road treatment and decommissioning. SSPP is the Shasta and Scott River Pilot Program. No cost estimates are available for water acquisition in the CCC or SONCC excluding the SSPP.
*Timberland management Alternatives shown at mid-point of estimated cost ranges. Alternative C not quantified. Total cost estimate includes average of timberland management Alternatives A and B ($463 million). Excludes socioeconomic impacts of timberland management Alternatives.